Exercise 1. Importing and testing a message flow

Estimated time

01:00

Overview

This exercise introduces you to the IBM App Connect development environment. To become familiar with the IBM App Connect Enterprise Toolkit views and navigator, you import a simple message flow project and examine the message flow components and properties. You will learn how to use the IBM App Connect Enterprise Toolkit Flow exerciser to test a message flow. Finally, you will create and start an integration server.

Objectives

After completing this exercise, you should be able to:

- Create and start an integration server
- Import an IBM App Connect Enterprise project interchange file
- Use the Message Flow editor to examine the message flow components and properties
- Test the message flow by using the IBM App Connect Enterprise Toolkit Flow exerciser

Introduction

An Integration Server provides an isolated runtime environment for a set of deployed message flows and resources. Each integration server runs as a unique operating system process in a separate address space. This exercise creates an independent integration server and imports and tests a basic message flow

Using an independent integration server has the following benefits:

- Natural choice for running docker images
- Run directly from a command console environment
- Controlled through their administrative REST API
- Receive configuration at start-up time

Independent integration servers are quick to start in IBM App Connect Enterprise software. The ability to quickly start an independent integration server is important when you are working in a development phase of your project or trying out the product for the first time. You can configure multiple integration servers, each with their own identity, and deploy them either to containers in the cloud or in an on-premises environment. After the integration server is running, you can access it from the IBM App Connect Enterprise Toolkit.

In the second section of this exercise, you import an IBM App Connect Enterprise project interchange (.zip) file that contains a simple application. The application contains a simple message flow that receives XML data over HTTP. The flow transforms the input XML structure into a different output XML structure by using a Mapping node and sends this back to the HTTP request.

The message flow contains three nodes:

- An HTTP Input node that receives the message.
- A Mapping node that is named Map that transforms the message.
- An HTTP Reply node that returns the message.

In the third section of this exercise, you examine the message flow and learn how to access message flow node properties, terminal information, and connection information. You also use the XML Schema editor to examine an XML schema and the Graphical Map editor to examine an IBM App Connect Enterprise .map file.

In the fourth section of this exercise, you use the Flow exerciser to deploy and test a message flow application. The project interchange file contains a sample XML that you use to test the message flow by using the IBM App Connect Enterprise Toolkit Flow exerciser.

Requirements

These are the requirements before running this exercise:

- A lab environment with the IBM App Connect Enterprise Toolkit
- The lab files in the `\labfiles\Lab01-TestSimpleFlow` directory

Exercise instructions

Attention

On your computer, start your student environment in the Google Chrome browser. You can also use Microsoft Edge. Some users of Mozilla Firefox browsers reported keyboard issues when typing in the lab environment.

If you encounter keyboard errors, use the Incognito Window option for Google Chrome, the InPrivate Window option for Microsoft Edge, or the Private Window option for Mozilla Firefox.

End of Attention section.

Section 1. Access the environment and create the integration server

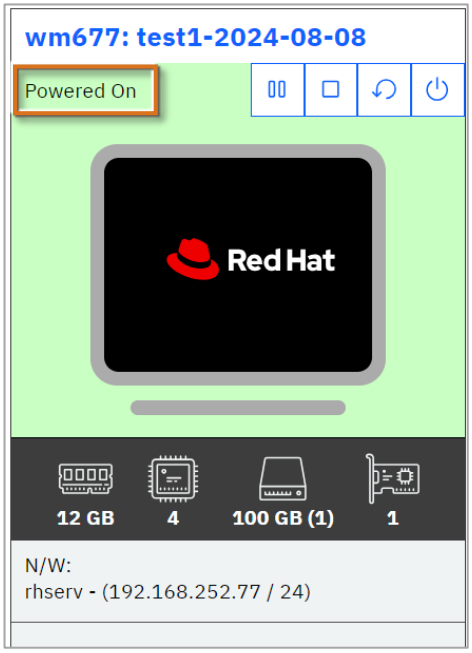
In this section you create and start an integration server. Then, you will access the server in the IBM App Connect Enterprise Toolkit so that you can develop and test a simple message flow.

__ 1. Sign in to your lab environment.

__ a. Start the lab environment by clicking the **Start VM**  icon.

The virtual machine name and other information on the tiles might be slightly different in your student environment from what is shown here.

__ b. After it starts, verify that the virtual machine is powered on.



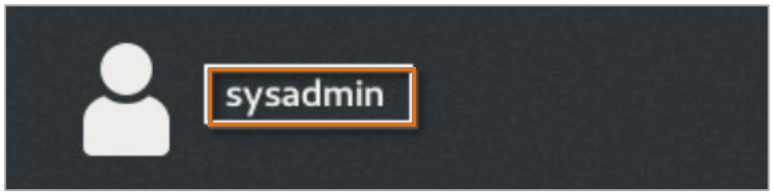
__ c. Click the monitor icon  in the course thumbnail tile.

Make sure that you are using Googe Chrome or Microsoft Edge browser.

__ 2. Log in to your lab environment.

If you are already logged in, you can skip this step.

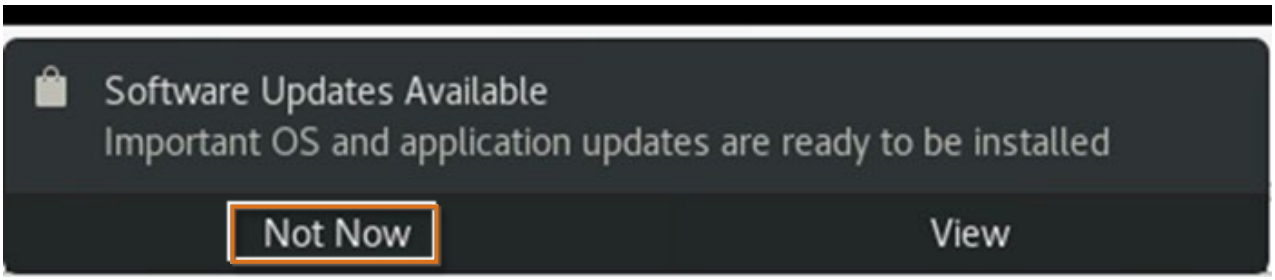
__ a. Select **sysadmin.**



__ b. In the **Username** field, enter `Passw0rd` and click **Sign In**.

Important

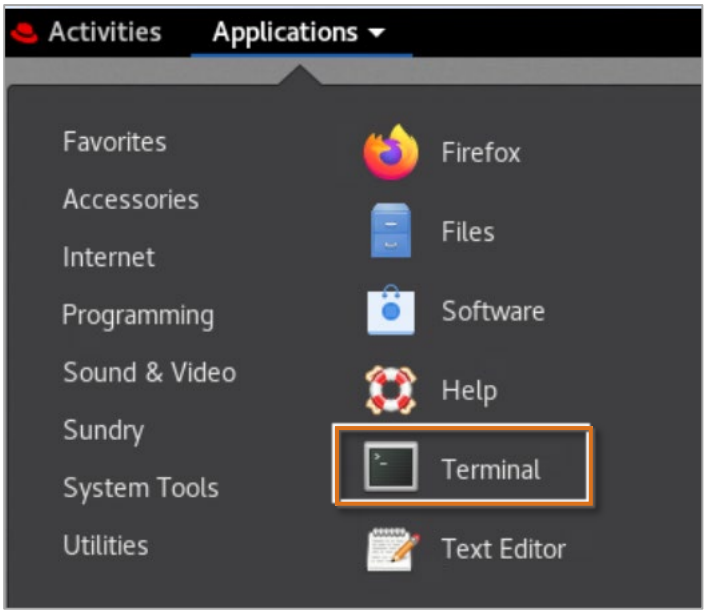
When working with the lab exercises, if you are prompted with the Software Updates notice, click **Not Now**. Do not update. Any updates yield unexpected results for the lab exercises.



End of Important section.

__ 3. Create and start an integration server

__ a. In the upper left corner, expand **Applications** > **Favorites** and click **Terminal**.



Before you start an integration server for the first time, you create a working directory

__ b. Enter the following command to confirm that you have access to the mqsiprofile:

```
mqsilist
```

If the command is successful, a message indicates that no integration nodes are present.

```
[sysadmin@rhserv ~]$ mqsilist

BIP1281I: No integration nodes have been defined on this machine
BIP8071I: Successful command completion.
[sysadmin@rhserv ~]$
```

__ 4. Start IBM App Connect Enterprise and create a workspace directory.

__ a. Return to the terminal and enter the following command:

```
Cd /opt/ibm/ace-12.0.12.0
```

The IBM App Connect Enterprise command console becomes available.

__ b. Enter the following to start the IBM App Connect Enterprise Toolkit:

```
./ace toolkit
```

If the command is run successfully, you see the following:

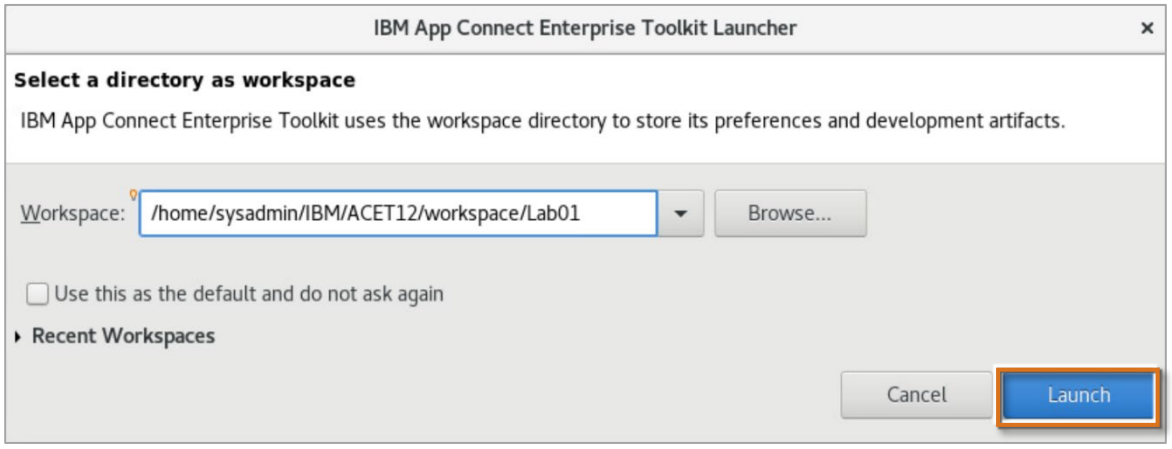
```
[sysadmin@rhserv ~]$ ./ace toolkit

Starting App Connect Enterprise Toolkit interactively
[sysadmin@rhserv ~]$
```

__ c. In the **Select a directory as Workspace** window, enter:
/home/sysadmin/IBM/ACET12/workspace/Lab01

At the beginning of most labs, you create a new directory that contains the exercise artifacts.

__ d. In the **IBM App Connect Enterprise Toolkit Launcher** window, click **Launch**.

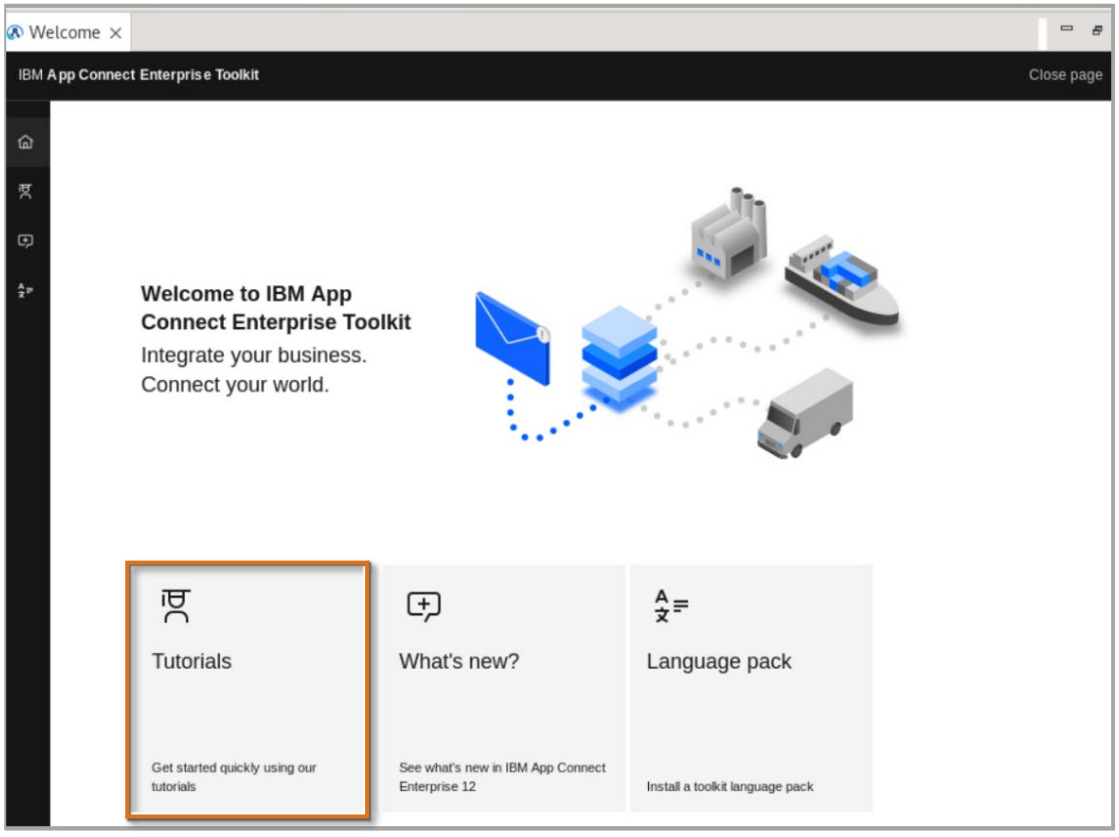


After several moments, the IBM App Connect Enterprise Toolkit starts and the **Welcome** page displays.

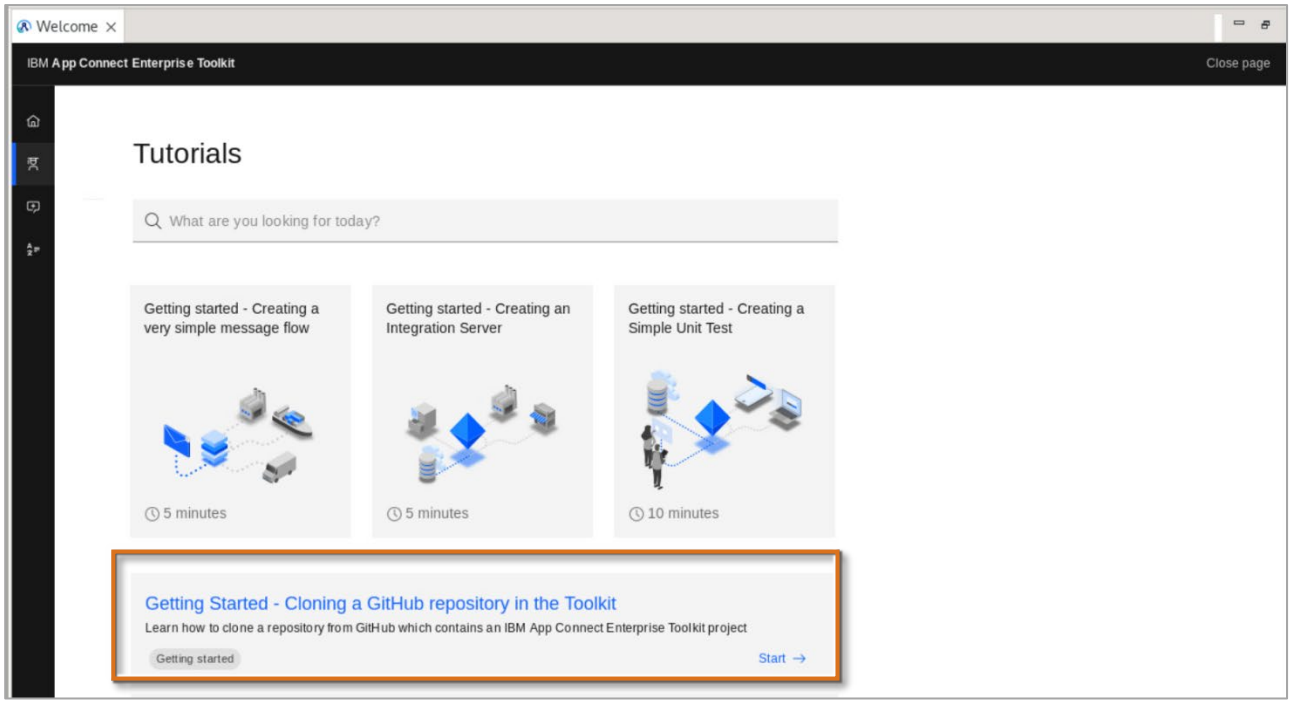
Section 2. Explore the Welcome page and perspectives

__ 1. Explore the tutorials.

__ a. On the **Welcome** page, click the **Tutorials** tile.



__ b. In the Tutorials section, click **Getting started - Creating a very simple message flow**.



The tutorial opens on the right panel.

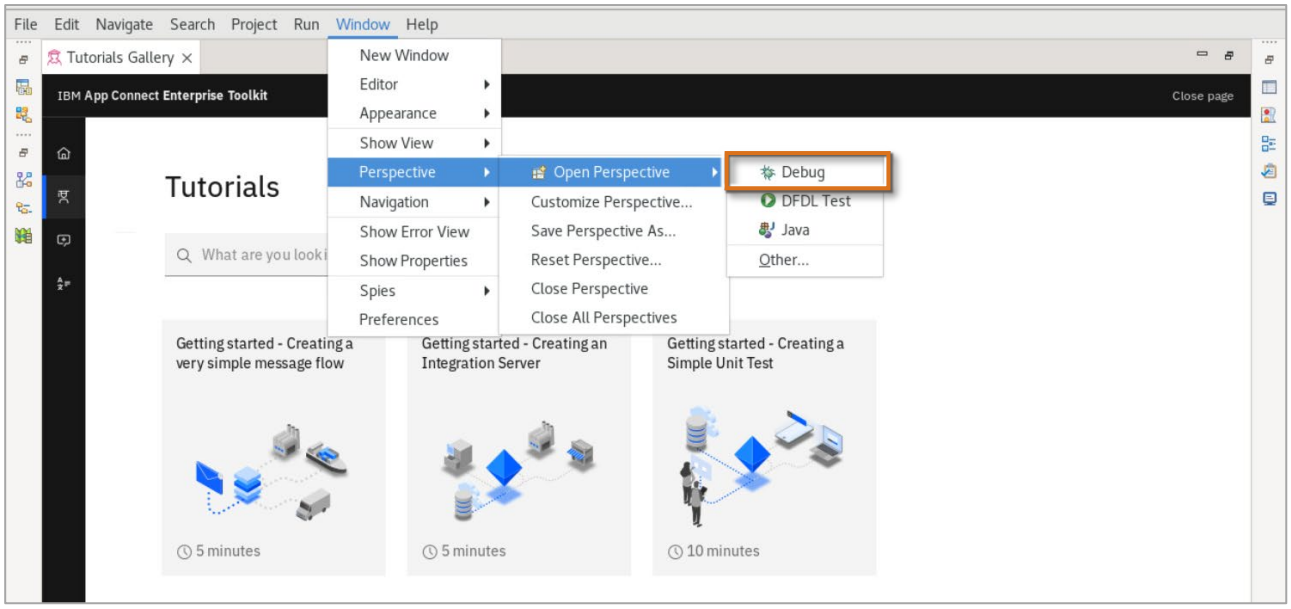
__ c. Close the tutorial by clicking the “X” in the tutorial

__ d. In the top of the page, click **Close page** to go to the **Application Development** perspective.

__ 2. Explore perspectives.

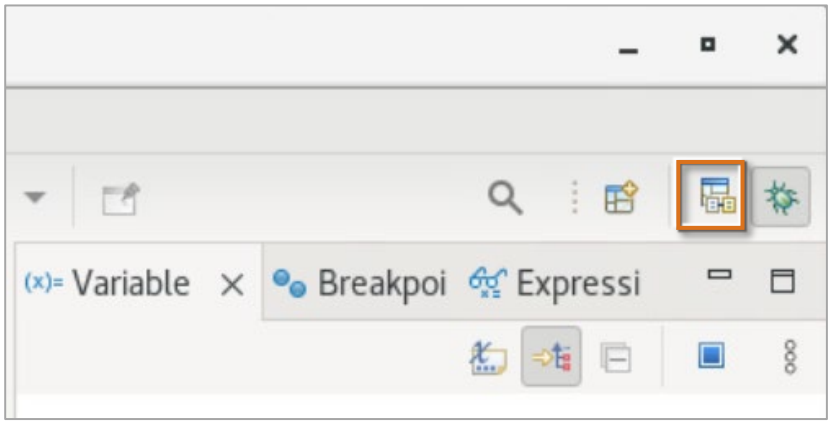
A perspective is a group of views and editors that show various aspects of the resources in the **IBM App Connect Enterprise Toolkit**.

__ a. In the toolbar, click **Window > Perspective > Open Perspective > Debug.**



IBM App Connect Enterprise opens the new perspective and places the **Debug** perspective icon next to the **Integration Development** perspective icon in the upper right.

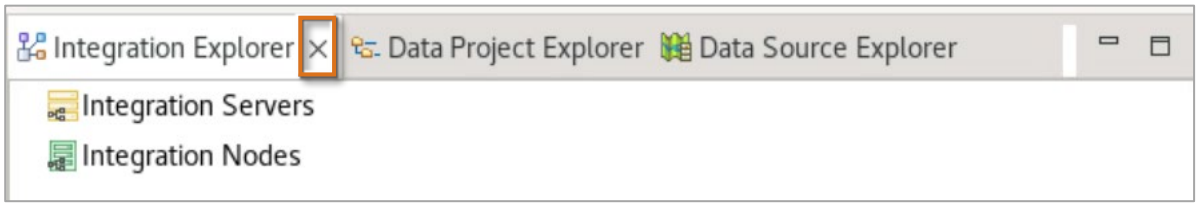
__ b. On the top of the toolbar, click the **Integration Perspective** icon to switch from the Debug perspective.



__ 3. Reset the perspective.

If you inadvertently close a view or alter your perspective, you can reset it back to the default layout.

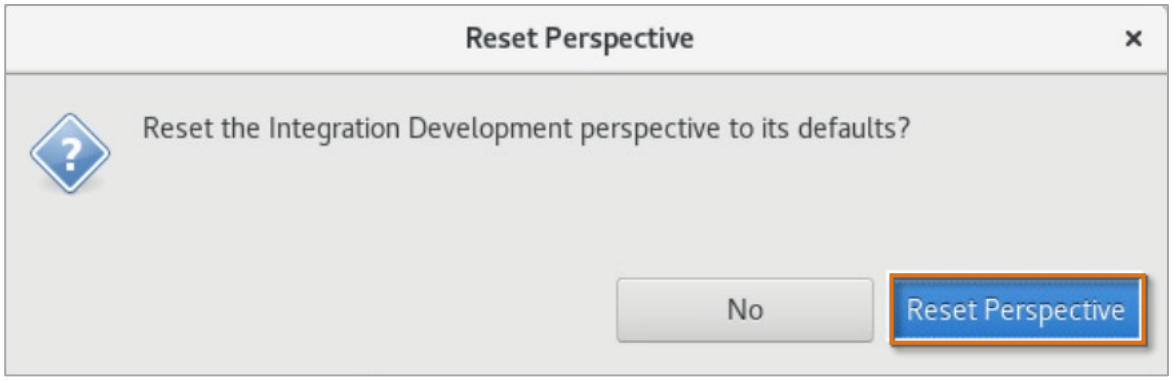
__ a. In the lower left corner, close the **Integration Explorer** by clicking the **X** in the tab.



__ b. In the Property view, close the **Properties** tab.

__ c. From the toolbar, reset the perspective by expanding **Window > Perspective > Reset Perspective**...

__ d. Click **Rest Perspective.**

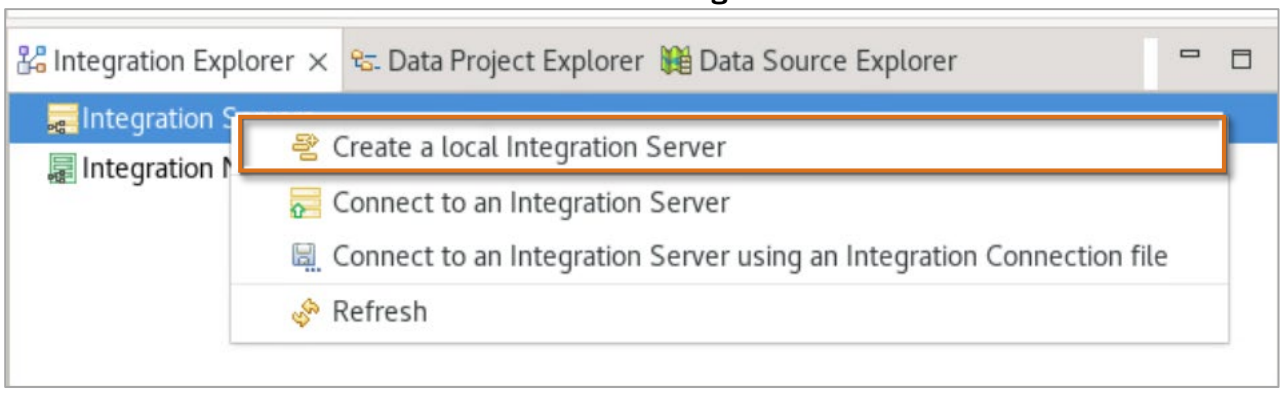


IBM App Connect Enterprise resets the perspective. The two tabs you closed are now displaying in their default position.

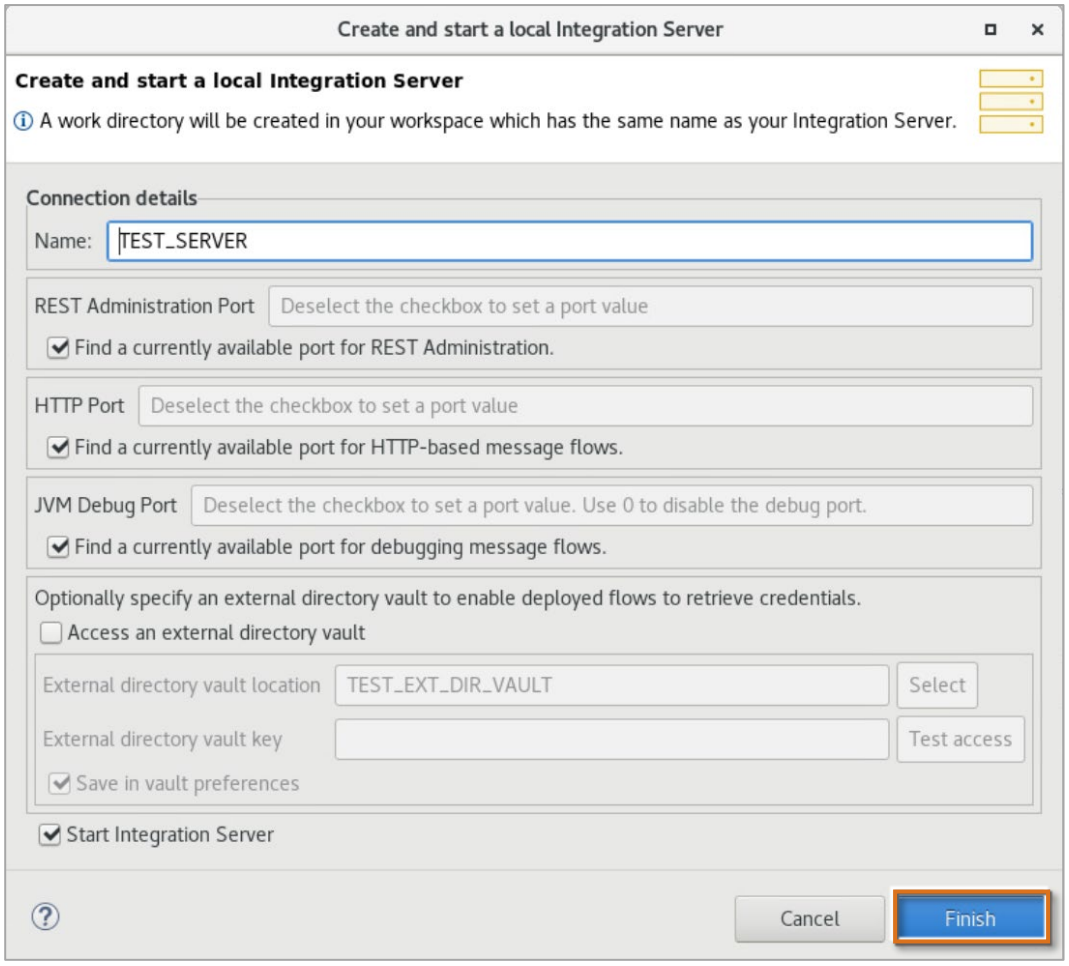
Section 3. Connect to integration server

__ 1. Use the IBM App Connect Enterprise Toolkit to connect to an integration server.

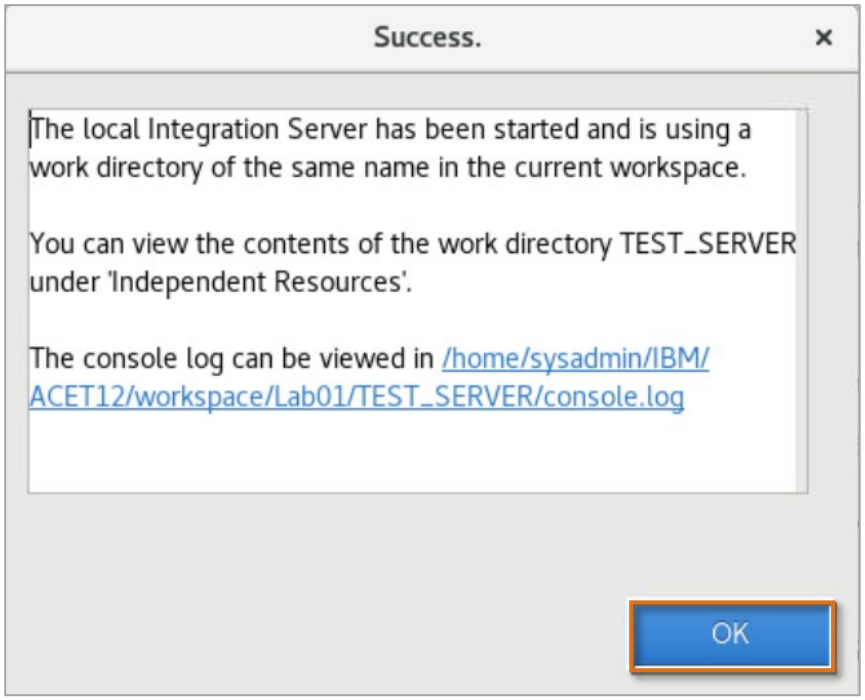
__ a. Right-click **Integration Servers** in the **Integration Explorer** view in the lower left corner and then select **Create a local Integration Server**.



__ b. In the **Create and start a local Integration Server** window, click **Finish**.



__ c. On the confirmation window, click **OK**.



__ d. In the Integration Explorer view in the lower left, expand **Integration Servers** by clicking the arrow beside 'Integration Servers' to view the status of the server.

A green up arrow indicates that the server is running.

__ 2. Examine the properties of the **TEST_SERVER**.

__ a. In the Integration Explorer view, click **TEST_SERVER**.

__ b. If the Properties tab is not highlighted, click **Properties.**

__ c. Scroll through the properties to view information about the **TEST_SERVER**.

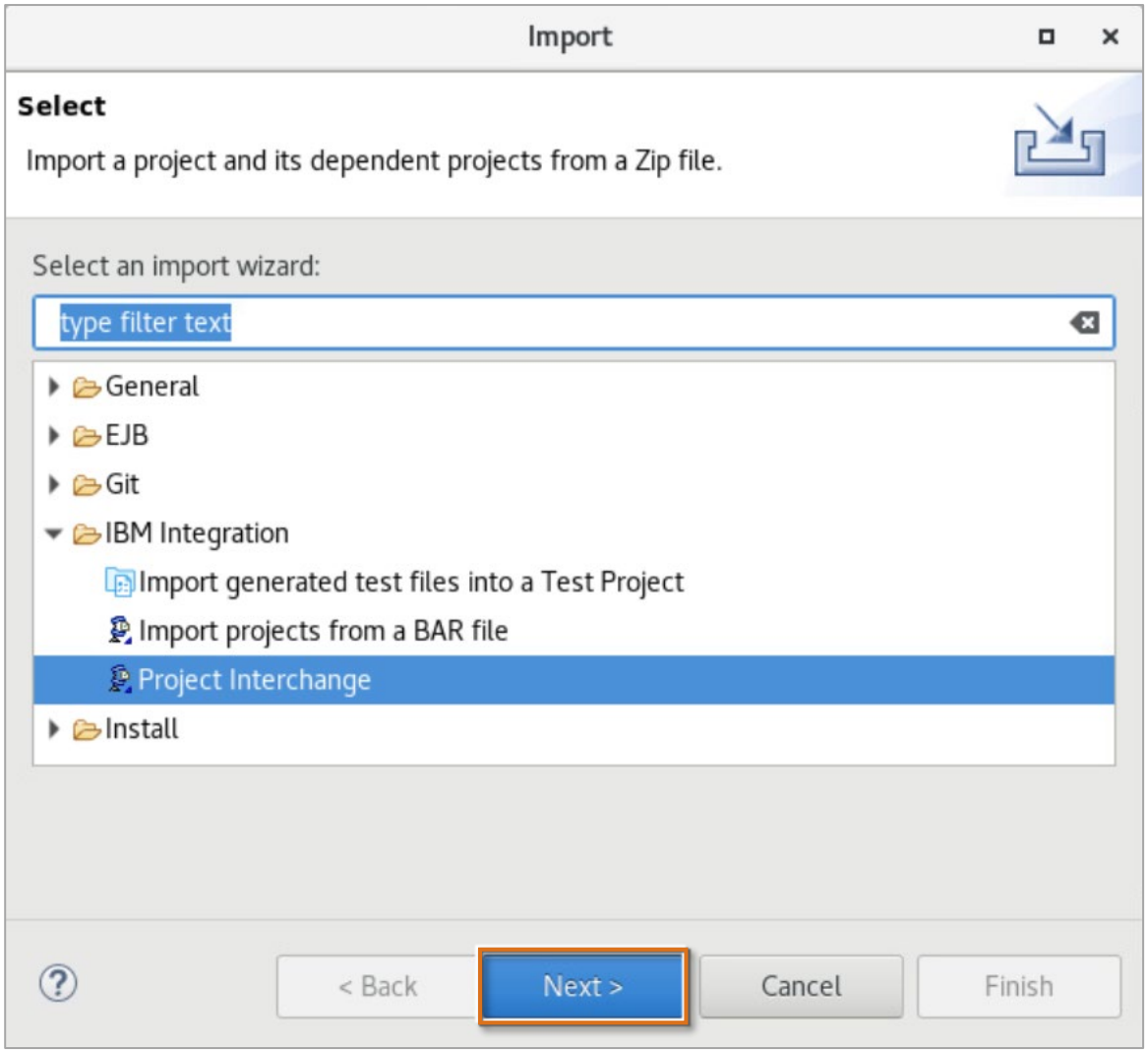
Section 4. Import a project interchange file explore and applications folders

In this section of the exercise, you import an IBM App Connect Enterprise **Project Interchange** file that contains an application with a simple message flow.

__ 1. Import the IBM App Connect Enterprise **Project Interchange** file that is named **SimpleFlowWithMap_PI.zip** from the `/labfiles/Lab01-TestSimpleFlow` directory into the **IBM App Connect Enterprise Toolkit**.

__ a. From the IBM App Connect Enterprise Toolkit toolbar, click **File** > **Import**.

__ b. Click **Project Integration** under **IBM Integration** and then click **Next**.



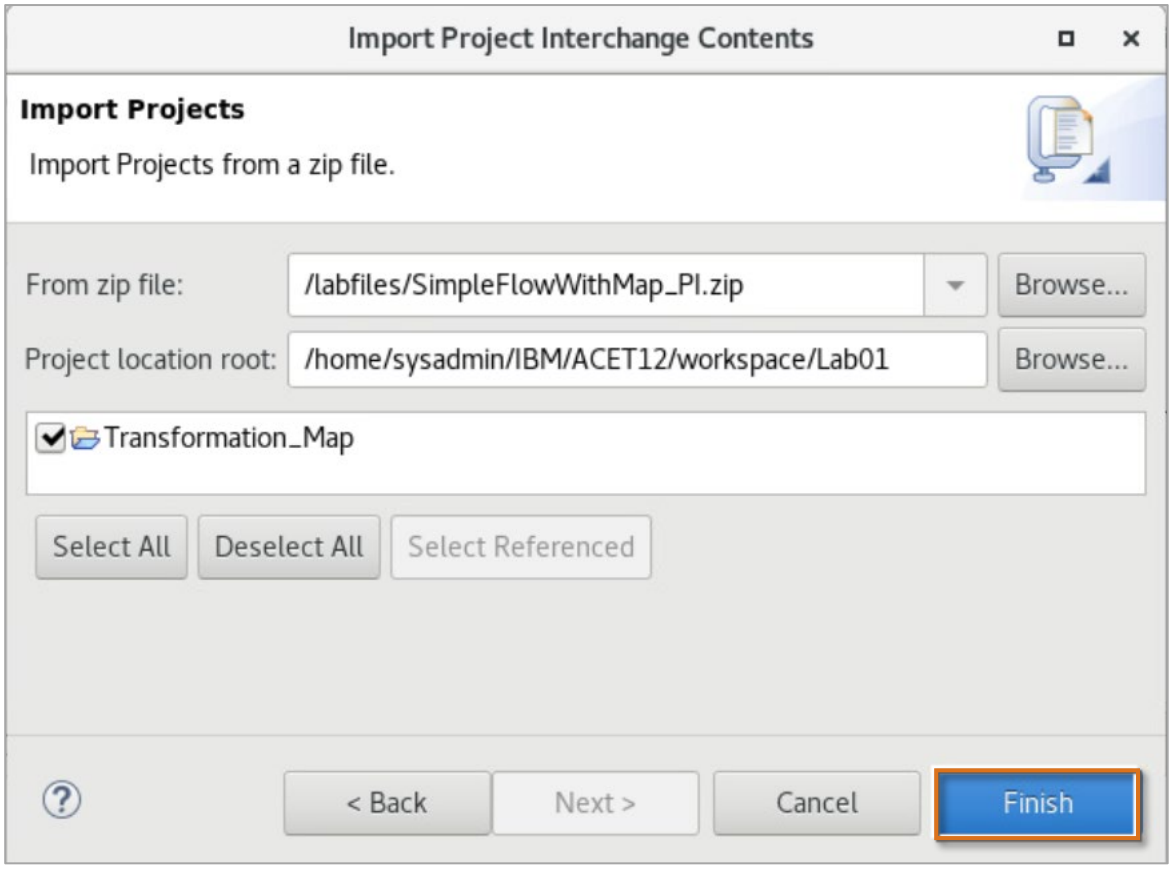
__ c. To the right of **From zip file**, click **Browse** to locate the **Project Interchange** file.

__ d. Browse to the `/labfiles/Lab01-TestSimpleFlow` directory, select the **Lab01-TestSimpleFlow.zip** file, and then click **Open**.

__ e. Confirm that the **Project location root** is set to the current workspace of `/home/sysadmin/IBM/ACE12/workspace/Lab01`

This **Project Interchange** file contains one application that is named **Transformation_Map**.

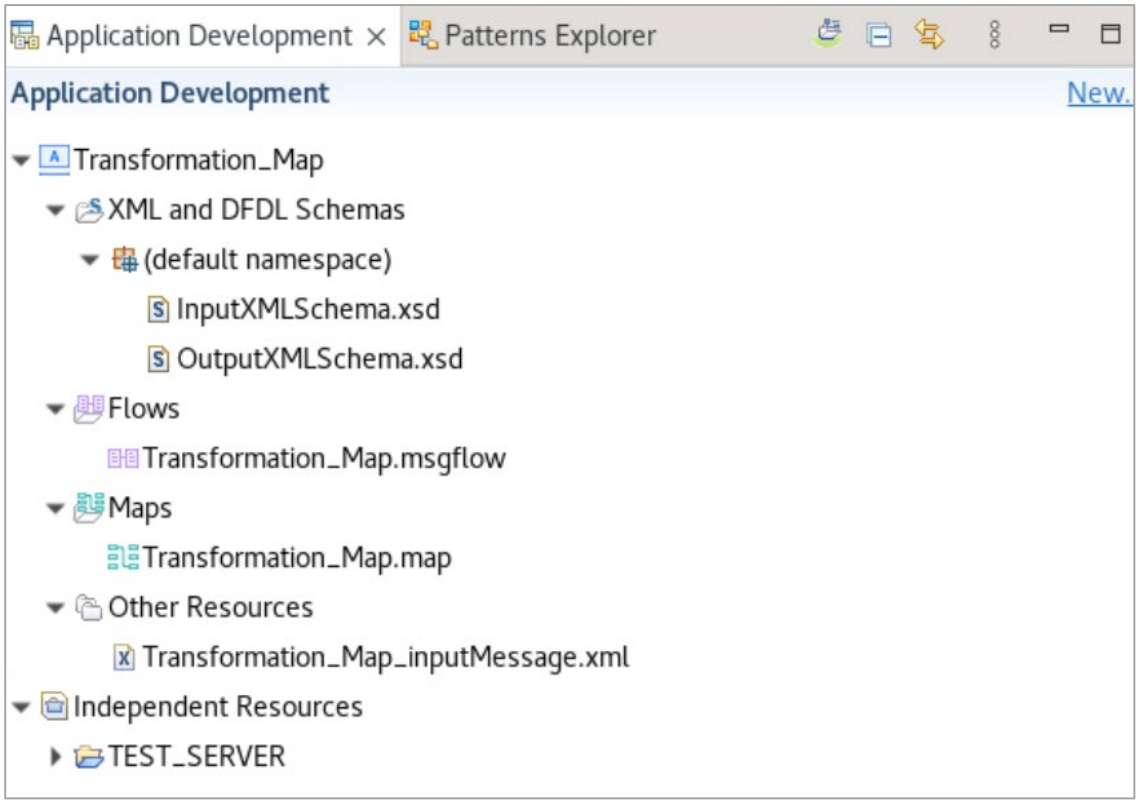
__ f. In the **Import Project Interchange Contents window**, click **Finish**.



__ g. Verify that the application is imported into the **Application Development** navigator by expanding the arrow beside the **Transformation_ map**.

__ 2. View the **Transformation_Map** objects.

__ a. In the **Application Development** view, expand the application folders to show the contents of the application.

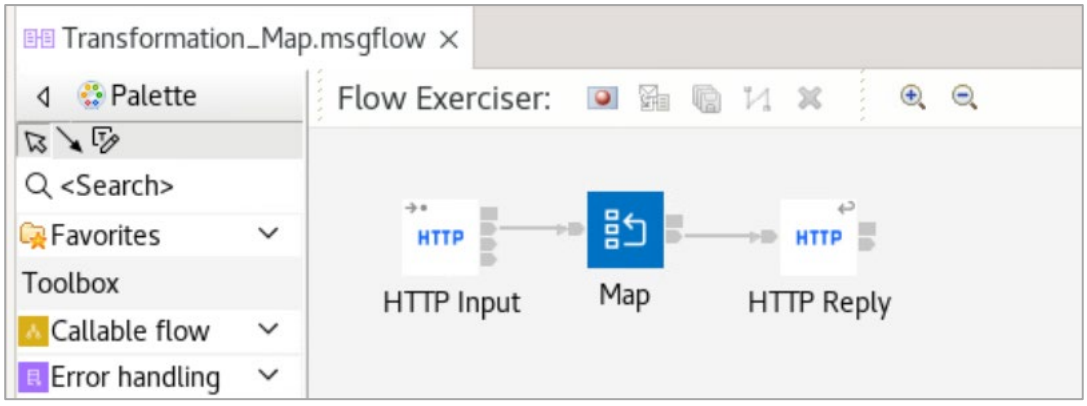


The figure shows the objects that are included in the **Transformation_Map** application. The application includes the following files:

- The XML schema definition files that define the input message (InputXMLSchema.xsd) and the output message (OutputXMLSchema.xsd)
- The message flow (**Transformation_Map.msgflow**)
- The **Transformation Map** ('Transformation_Map.map') that the Mapping node references
- A sample input file (**Transformation_Map_inputMessage.xml**)

__ 3. View the properties for the **HTTP Input** node.

__ a. Double-click **Transformation_map.msgflow** in the Application Development view to open it in the **Message Flow** editor.



The message flow contains three nodes:

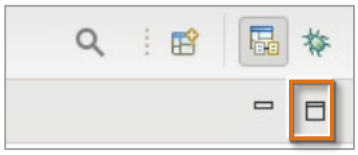
- An **HTTP Input** node
- A **Mapping** node that is named Map
- An **HTTP Reply** node

Section 5. Review the message flow editor

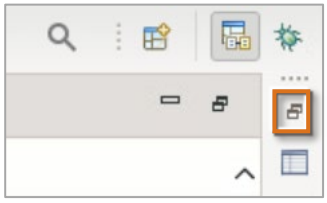
__ 1. Change the message flows layout.

IBM App Connect Enterprise has capabilities to help you in laying out the nodes in various manners. The default layout for the nodes' alignment and arrangement is left-to-right

__ a. If the canvas is not large enough, you can increase the size by clicking the **Maximize** icon in the upper right of the canvas.

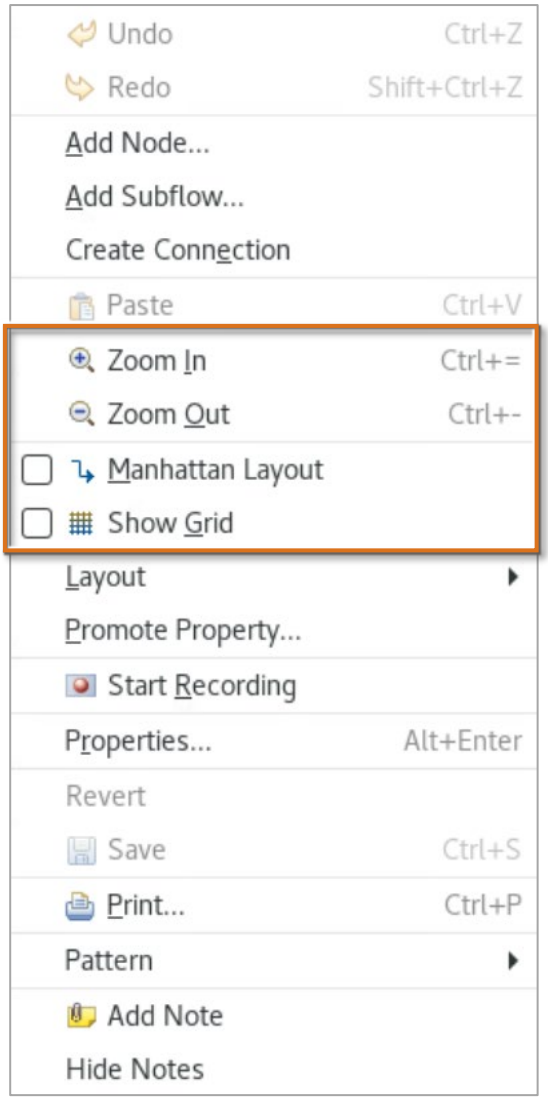


__ b. Click **Restore** icon to reset the view in the upper right.



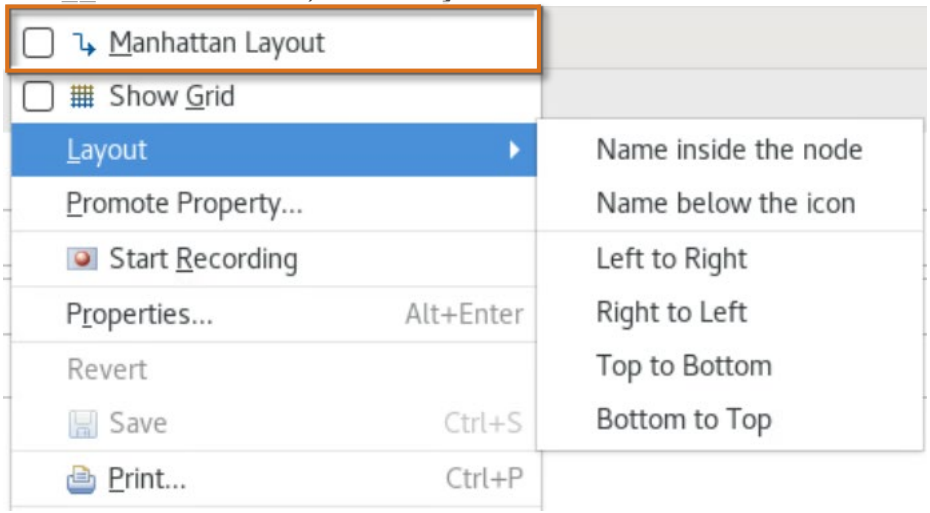
__ c. Right-click on an empty space on the canvas.

Note from this menu you can zoom in and out, show a grid, or change to **Manhattan Layout**.



You can also change the layout of the nodes by selecting Layout.

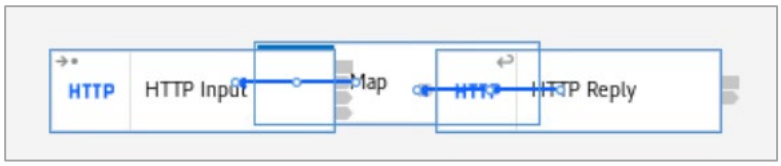
__ d. In the menu, select **Layout > Name inside the node**.



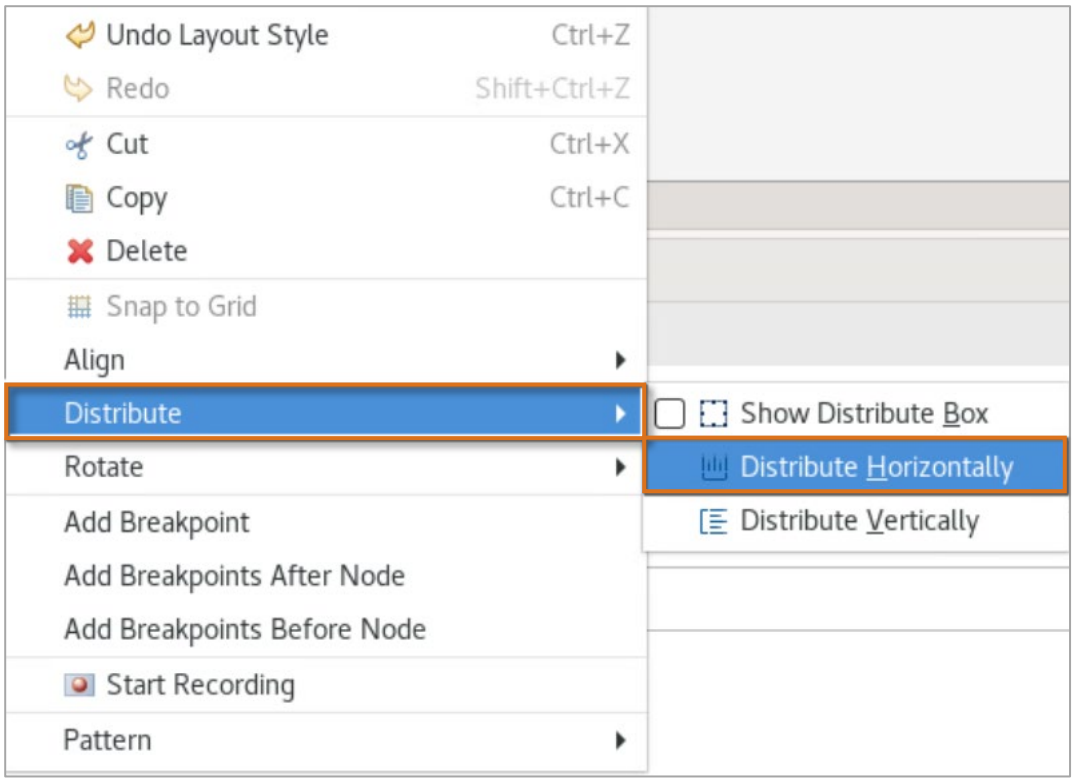
IBM App Connect Enterprise updates the node layout.

__ 2. Restore the message flows layout.

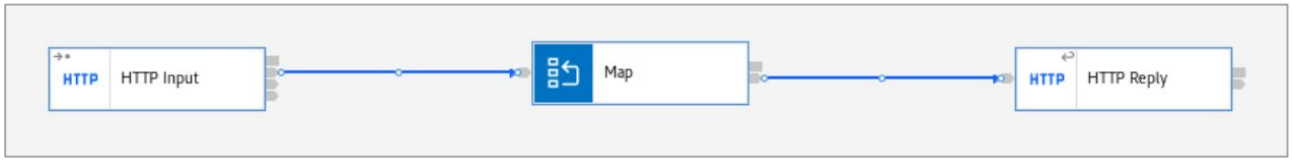
__ a. Click an empty space in the upper-left of the message flow and drag the cursor to the lower-right of the message flow.



__ b. Right-click one of the highlighted nodes and select **Distribute > Distribute Horizontally**.

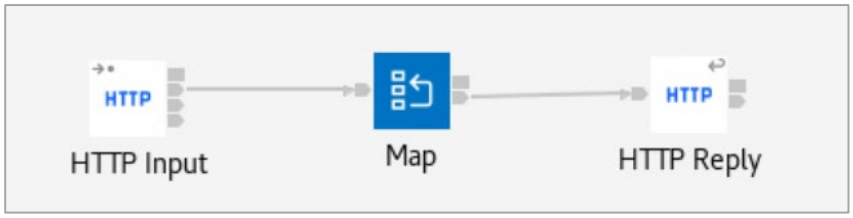


IBM App Connect Enterprise distributes the nodes evenly along a horizontal line.



__ c. Right click an empty space in the canvas and expand **Layout > Name below the icon**.

The names of the nodes appear below the node icons.

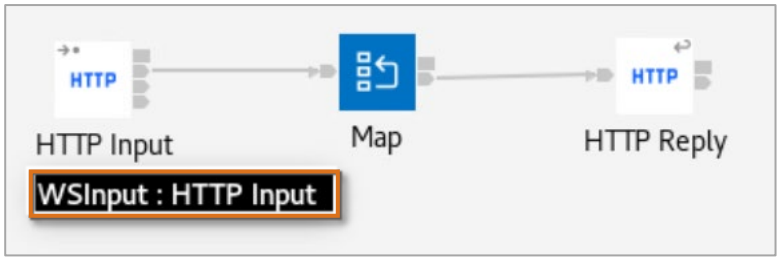


__ d. Save your work (Ctrl+S).

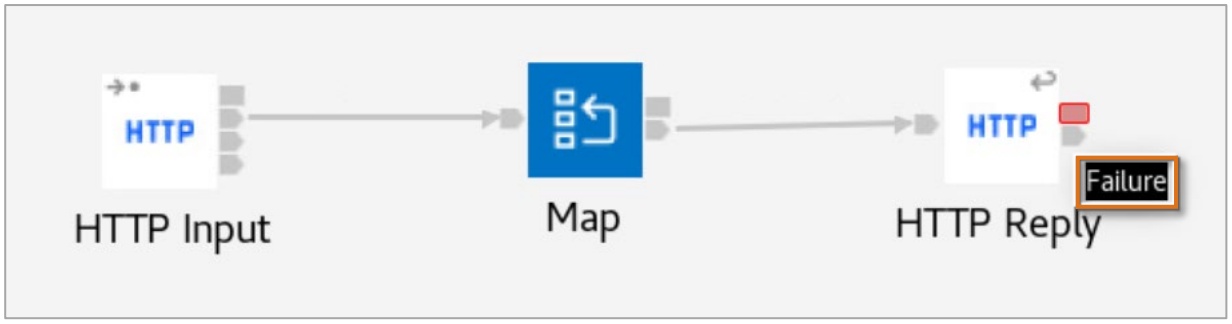
__ 3. Examine the node properties and terminals in the message flow.

__ a. In the **Message Flow** editor, place your cursor over the **HTTP Input node**.

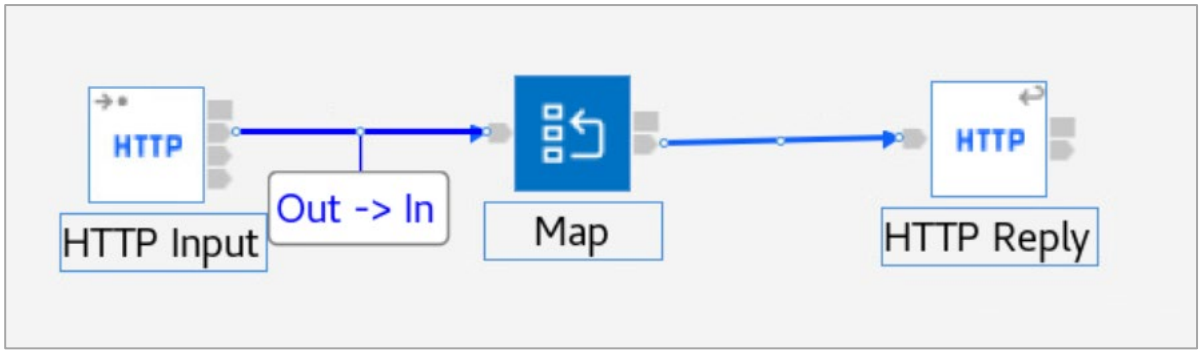
The node type and node name are displayed in the format **NodeType : NodeName**.



__ b. In the **Message Flow** editor, place your cursor over the **HTTP Reply node** terminal to display the terminal name.



__ c. In the Message Flow editor, place your cursor over the wire between the **HTTP Input** and **Map** nodes to display the connection information.

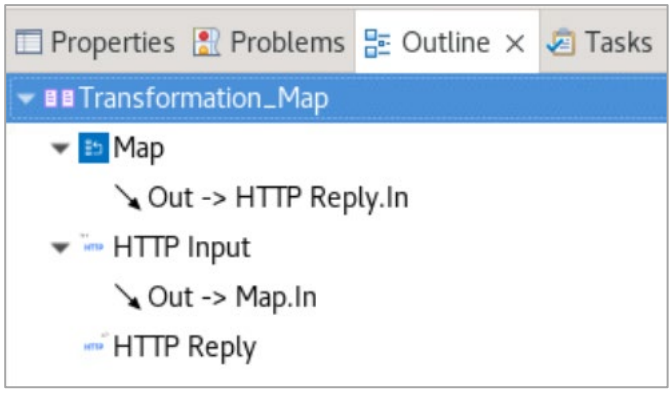


The names of the terminals to which the wire is connected are displayed in the format `SourceTerminal -> TargetTerminal`.

__ 4. View the Transformation map in an outline view and with the Graphical map editor.

__ a. In the Properties view, click the **Outline** tab to display the connection information.

__ b. Expand the **Map** and **HTTP Input** node entries in the **Outline** view by clicking the arrow next to each node icon.



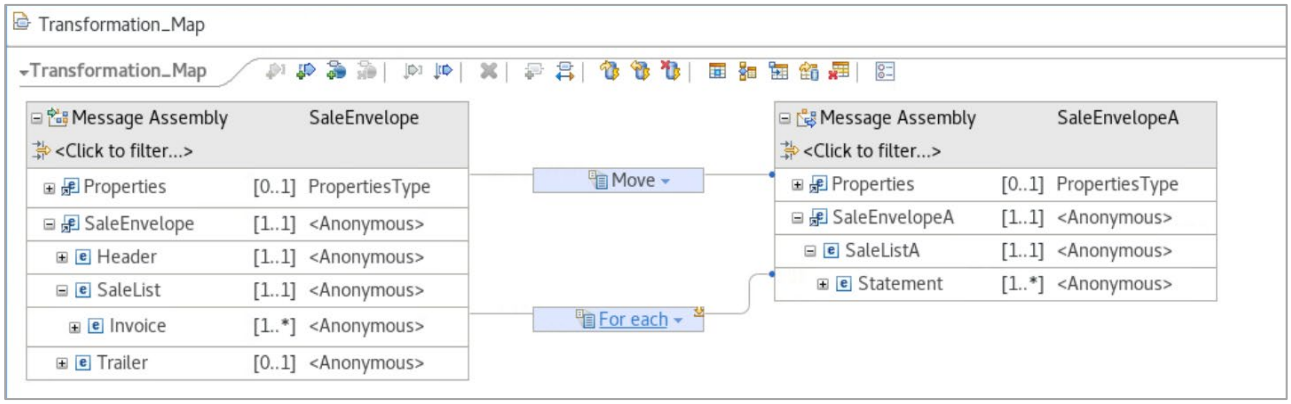
The **Outline** view shows that the **Out** terminal of the **Map** node is wired to the **In** terminal of the **HTTP Reply** node as denoted by **HTTP Reply.In.**

The Out terminal of the **HTTP Input node** is wired to the In terminal of the **Map** node as denoted by **Map.In**.

__ 5. Examine the **Transformation Map**.

__ a. Double-click the **Map** node in the **Message Flow** editor to display the Graphical Map editor view of the **Transformation_Map**.

__ b. Double-click the **Transformation_Map** tab to expand the Graphical Map editor view so that you can see the entire map.



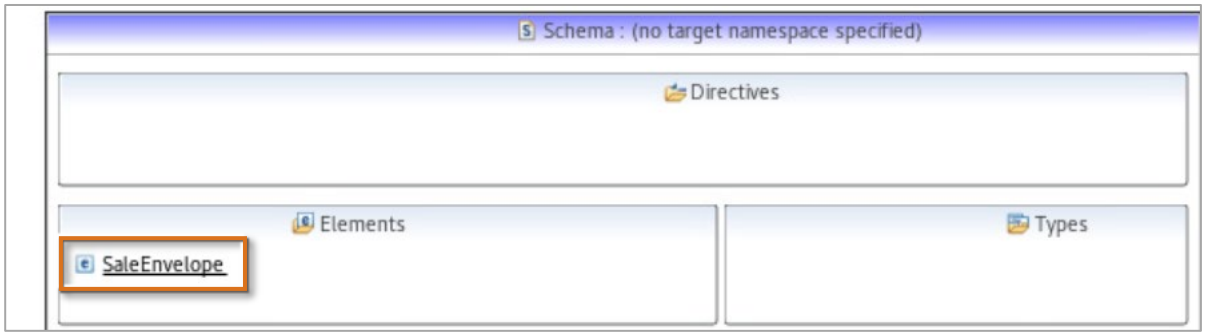
__ c. Double-click the **Transformation_Map** tab again so that it changes the view back to its original size.

__ d. Close the **Transformation_Map** tab by clicking the X on the tab.

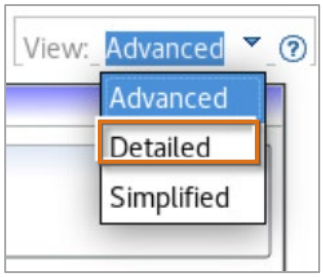
__ 6. Examine the XML schema that defines the message flow input.

__ a. In the Application Development view on the left, double-click the **InputXMLSchema.xsd** file under the **XML and DFDL Schemas** > (**default namespace**) package to open it in the XML Schema editor.

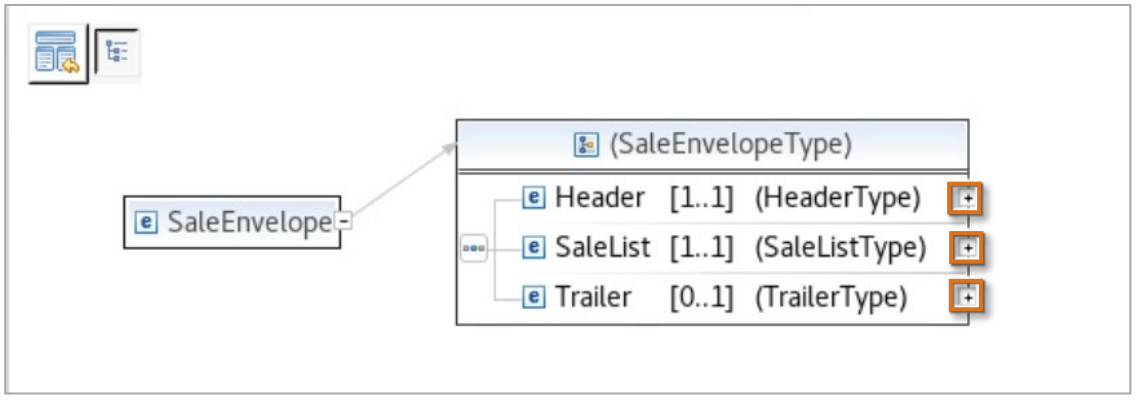
__ b. In the XML Schema editor, double-click **SaleEnvelope** to display the schema details.



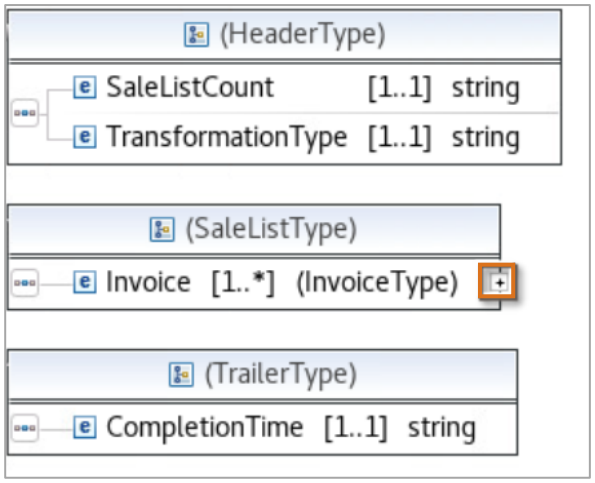
__ c. In the upper right of the canvas, click the arrow beside **View: Advanced** and select **Detailed**.



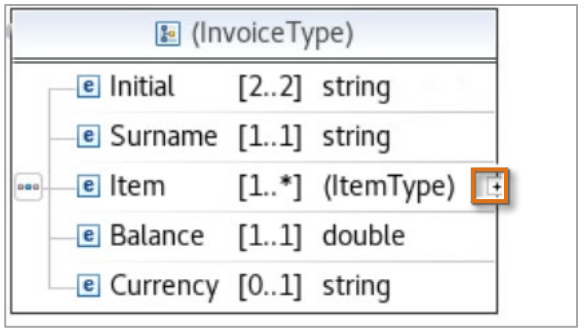
__ d. Click the plus signs to expand the **SaleEnvelopeTypes** .



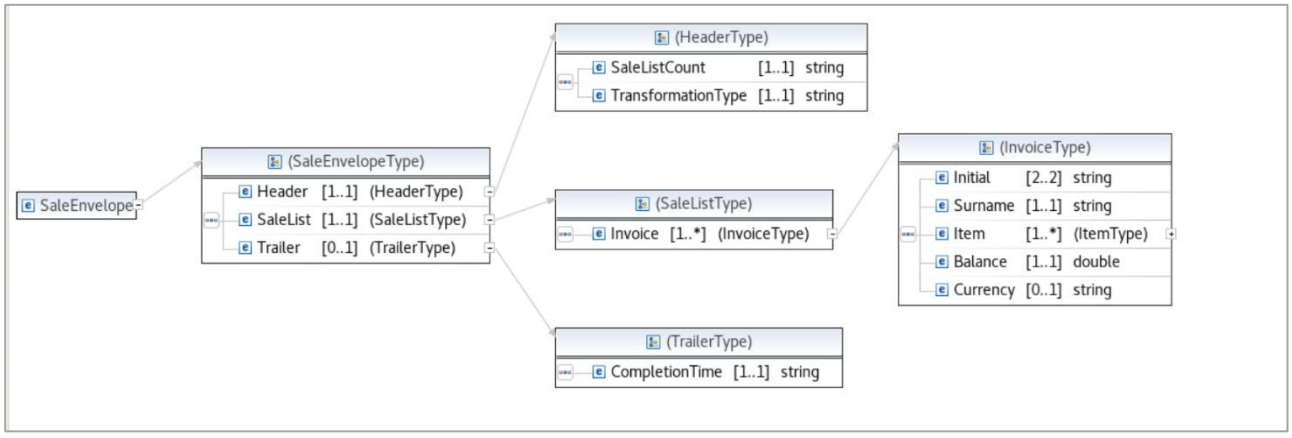
__ e. Click the plus sign to expand the **SalesListType**.



__ f. Click plus sign to expand the **InvoiceType**.



__ g. Verify the **InputXMLSchema.xsd** file.



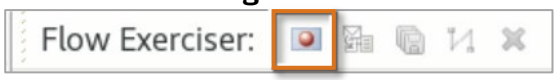
__ h. Close the **InputXMLSchema.xsd** tab.

Section 6. Test with the flow exerciser

In this section of the exercise, you test the message flow with the IBM App Connect Enterprise Toolkit Flow Exerciser and a test message.

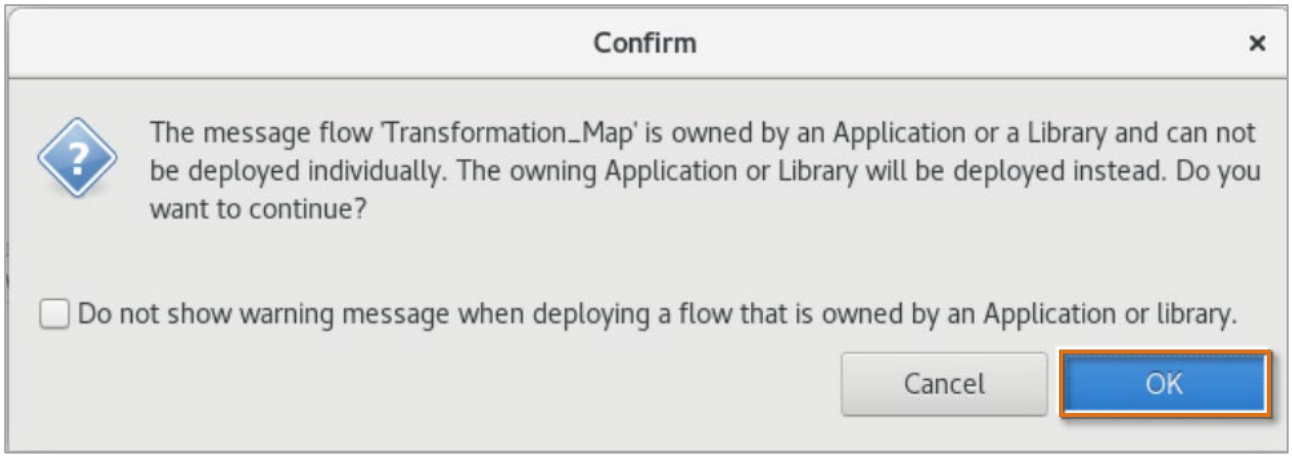
__ 1. Start the **Flow Exerciser**.

__ a. Return to the message flow and click the **Flow Exerciser** icon at the top of the **Message Flow** editor.



The **Flow Exerciser** icon is a toggle with which you can switch between **Flow Exerciser mode** and **edit mode**.

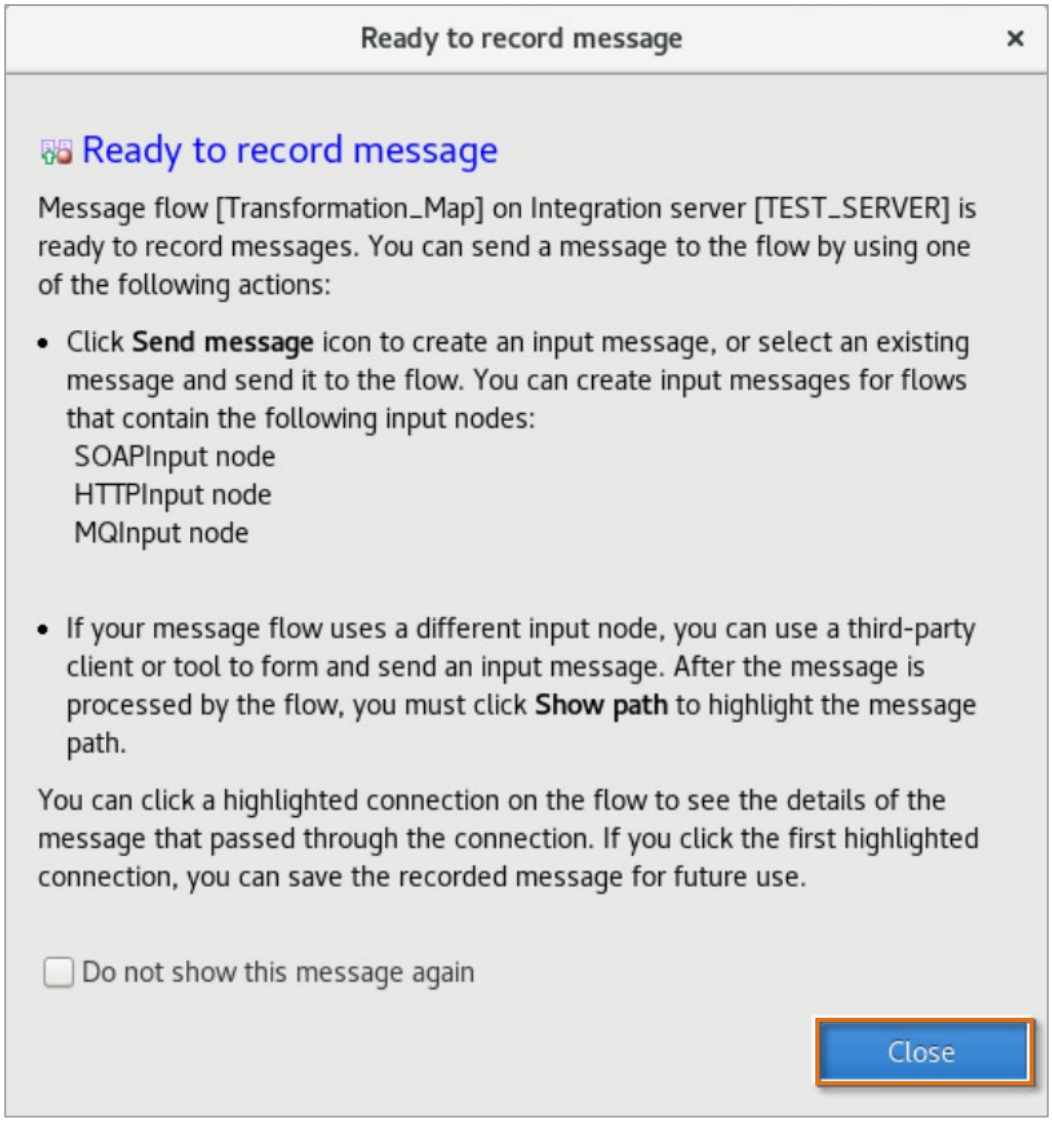
__ b. Click **OK** in the **Confirm** window.



The **Flow Exerciser** creates the BAR file and deploys it to the **Integration Server**. If any messages are displayed while the **Flow Exerciser** is running, ignore them; they are information messages and disappear on their own.

After a few seconds, you will see a window that indicates that the **Flow Exerciser** is ready to record a message.

__ c. In the **Ready to record message** window, click **Close**.



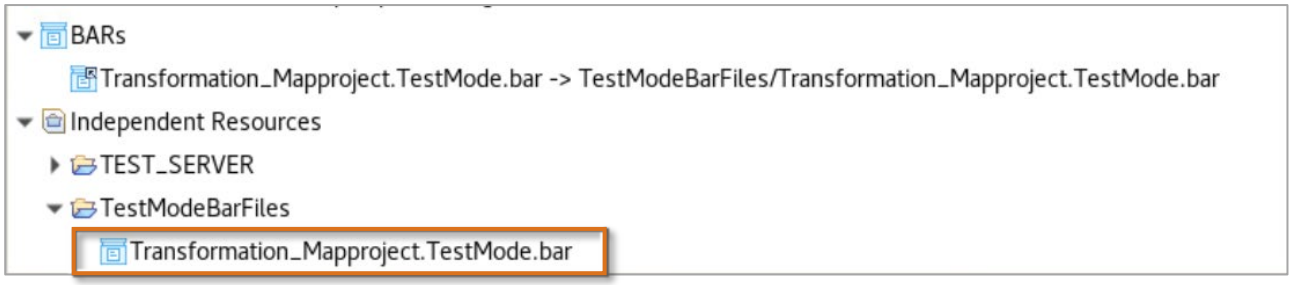
__ 2. Verify that the **Flow Exerciser** Record mode started, and that the application was deployed.

__ a. In the **Integration Explorer** view, expand **Transformation_Map.**

There is a red Recording icon beside Transformation_Map.

__ b. In the **Application Development** view, expand **TestModeBarFile.**

A project that is named **Transformation.Mapproject.Testmode.bar** is in the **Independent Resources** directory.

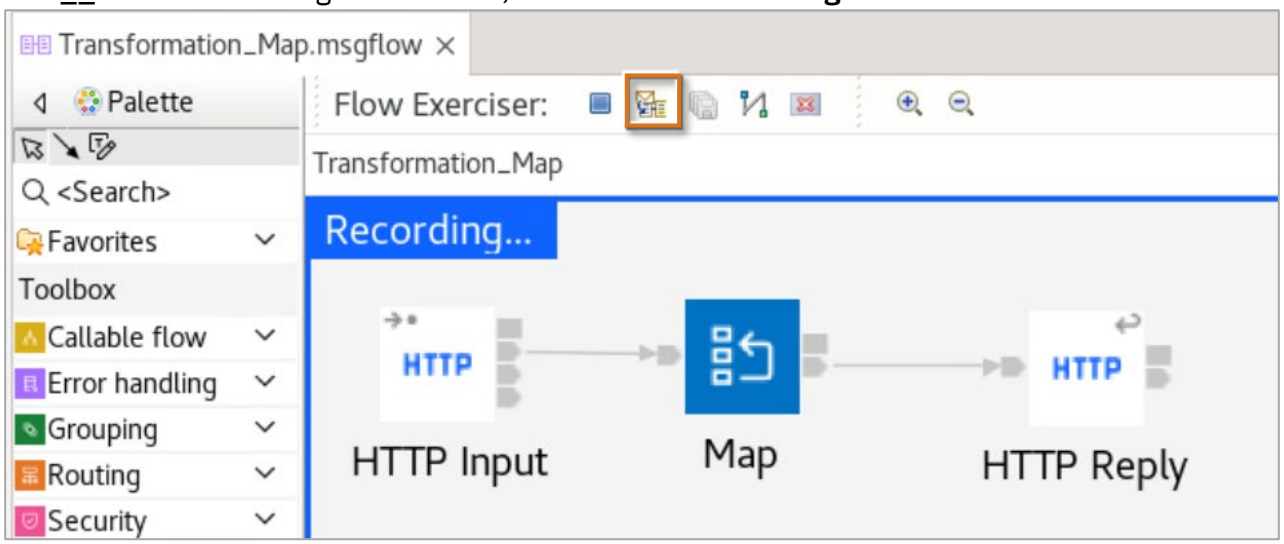


The screen capture before this contains the BAR file (with a .bar extension) that the **Flow exerciser** built and deployed to the integration server.

__ c. In the Property view, click the **Deployment Log** to view the details of the deployed message flow.

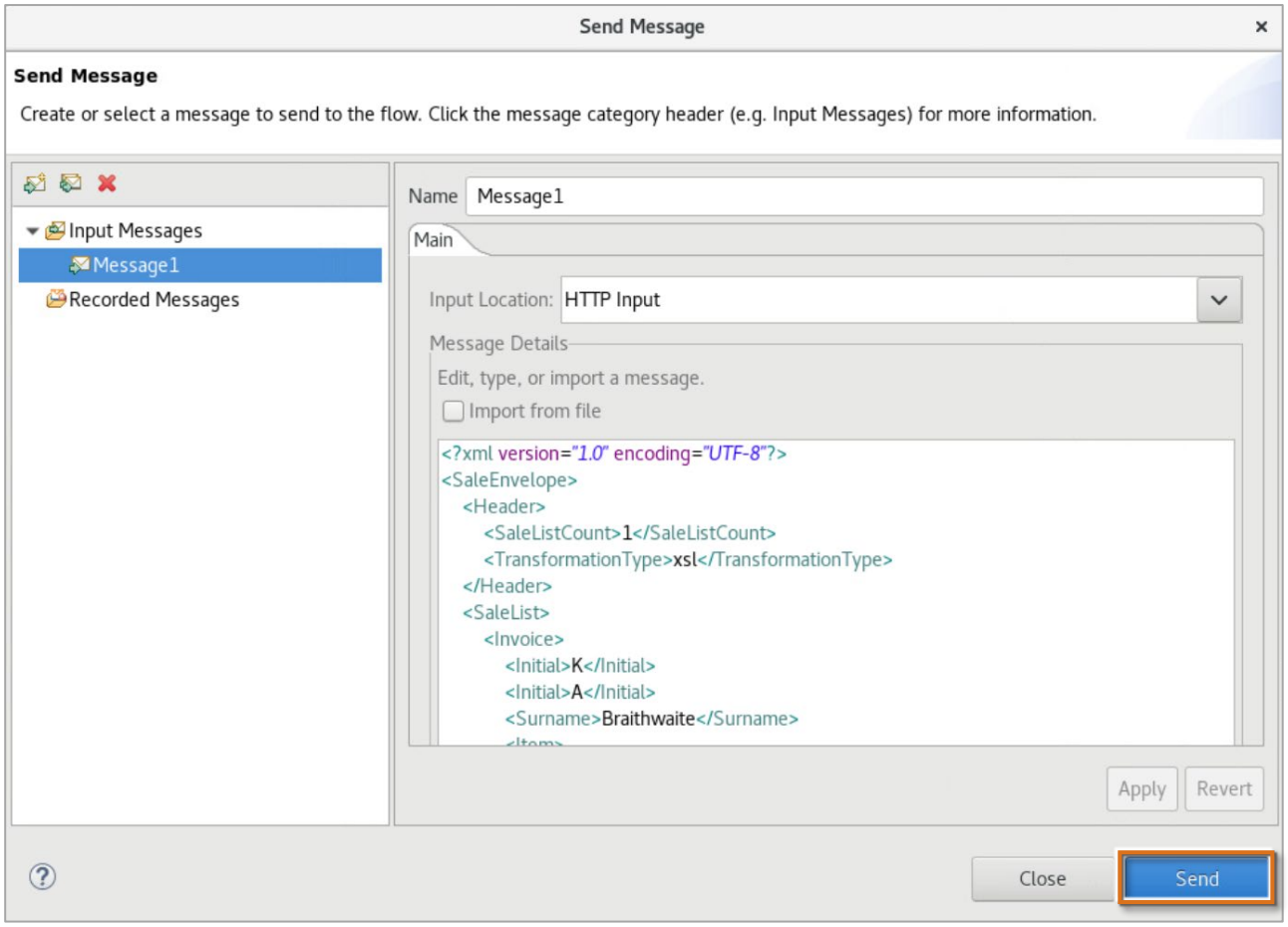
__ 3. Send a test message to the Transformation_Map message flow.

__ a. In the Message Flow editor, click the **Send a message to the flow** icon.



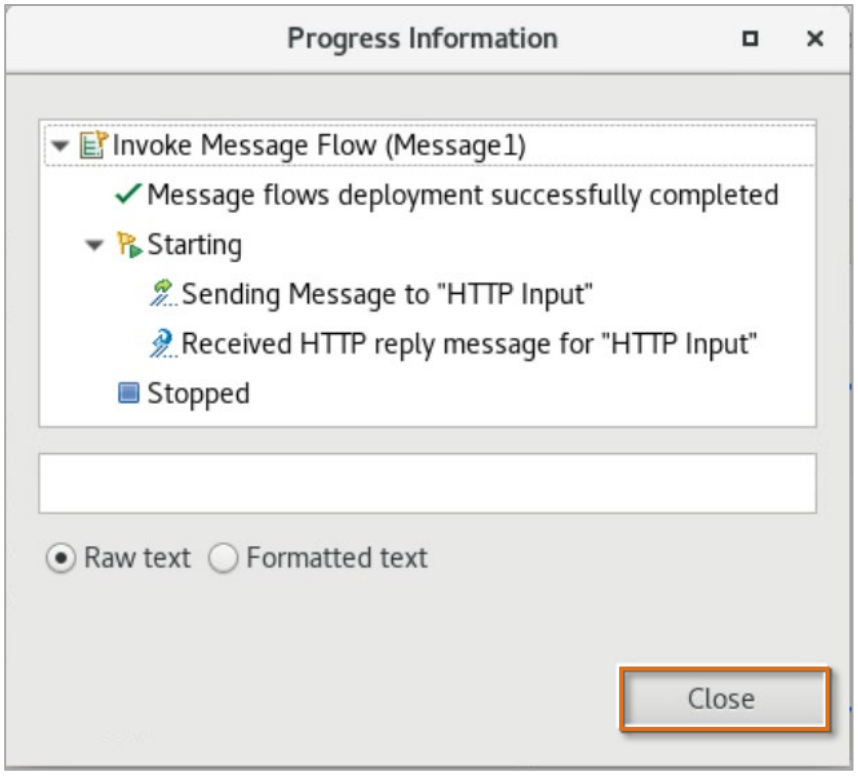
__ b. In the **Send Message** window, click **Message1**.

__ c. Click **Send.**

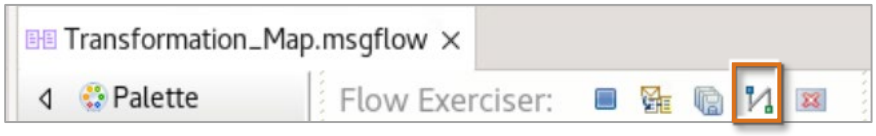


The **Progress Information** window shows you the status of the message flow test. In this exercise, the **Progress Information** window shows that the message was sent to the HTTP Input node and that the reply message was received.

__ d. In the **Progress Information** window, click **Close**.

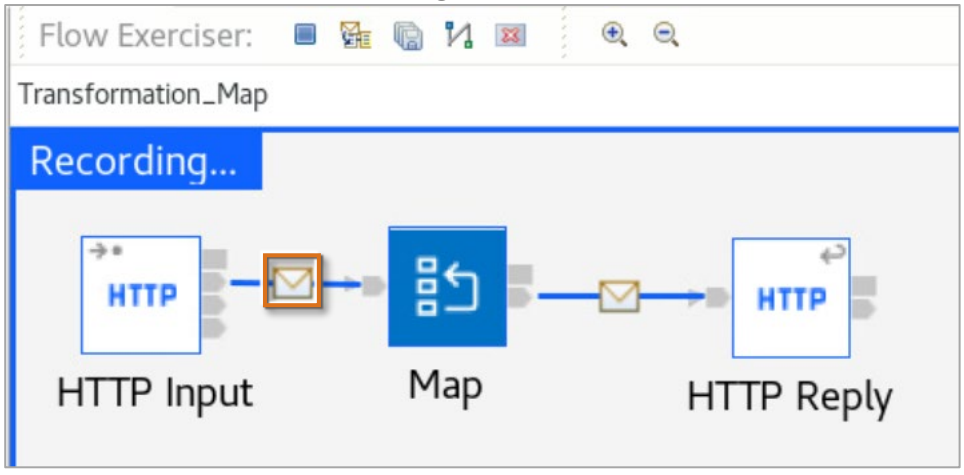


__ e. In the Message flow editor toolbar, click the **view path** icon.

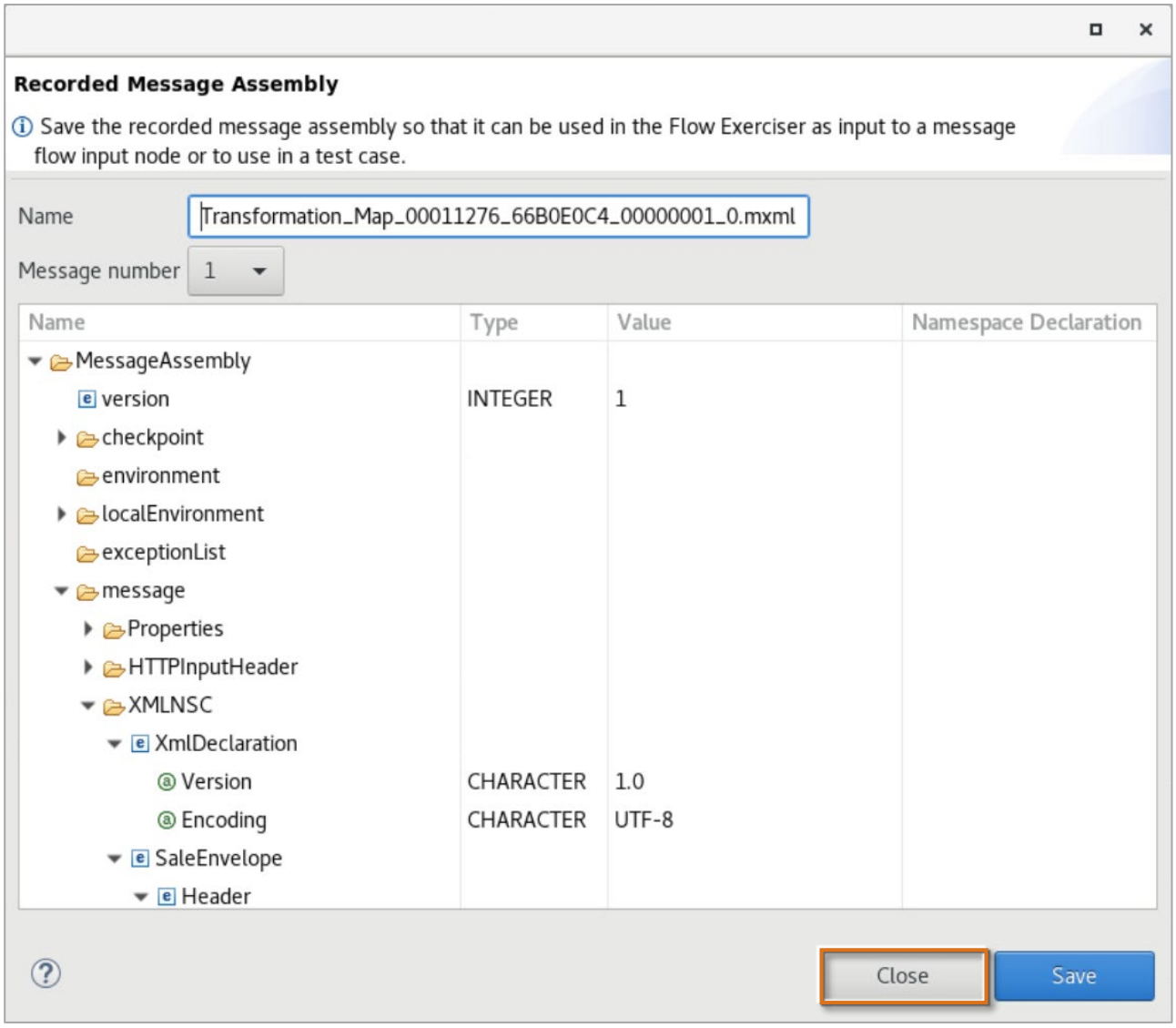


__ 4. View the test message.

__ a. Click the message icon that is between the **HTTP Input** node and the **Map** node to view the input message.



__ b. After you review the **Recorded Message Assembly**, click **Close**.

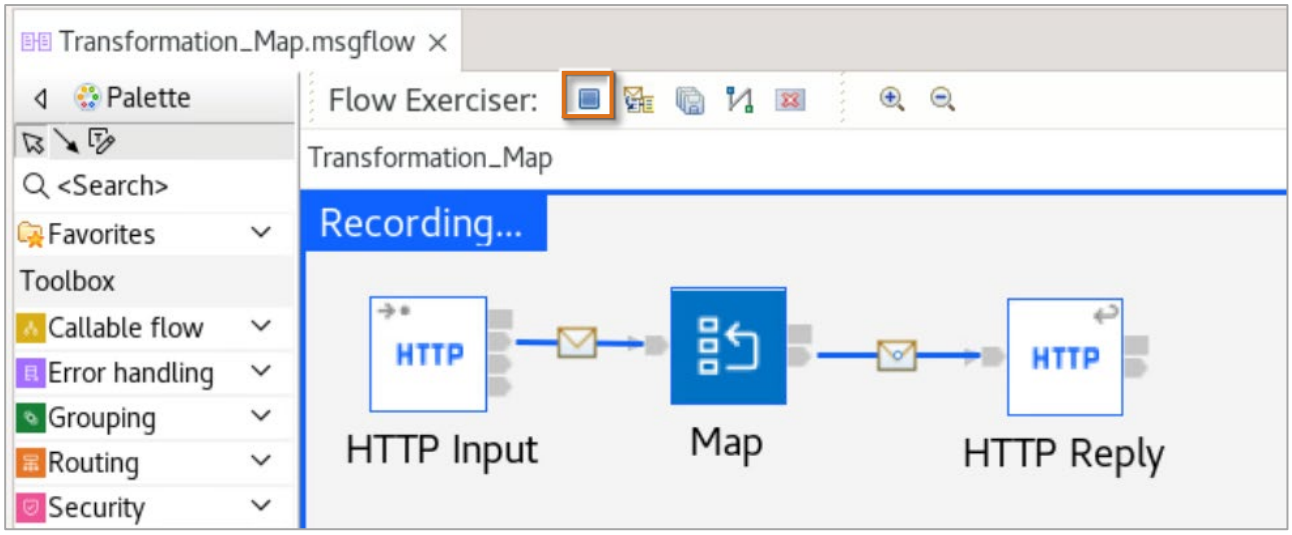


__ c. Return to the Canvas and click the **message icon** that is between the **Map** node and the **HTTP Reply** node to view the message after the **Map** node transformed it.

__ d. After you review the output message, close the **Recorded Message Assembly** window.

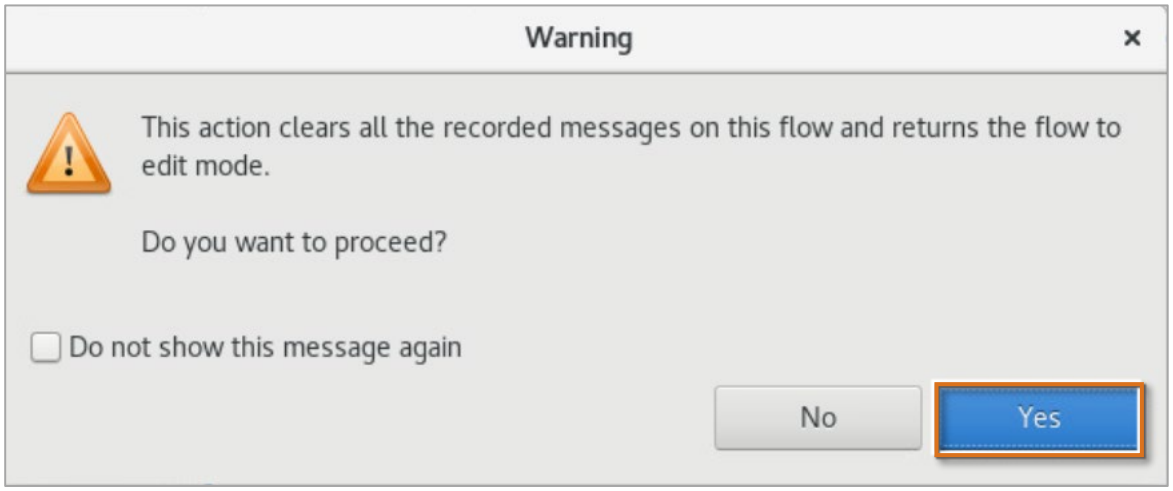
__ 5. Return to the edit mode and stop the Message Flow Editor.

__ a. Click the **Return flow to edit mode** icon at the top of the **Message Flow Editor**.

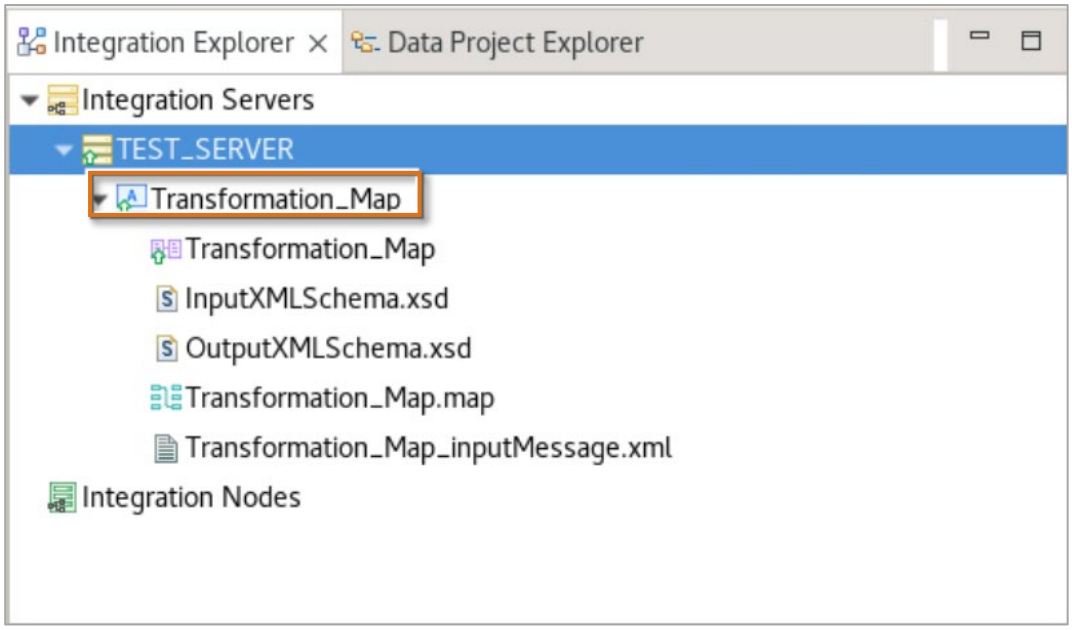


A warning message reminds you that changing back to edit mode clears all the recorded messages on this flow. It also reminds you to stop recording mode on the integration server if you are finished with testing,

__ b. Click **Yes**.



__ c. In the **Integration Explorer** view, expand the **Transformation_Map** application to display the contents and verify that it is not in record mode.

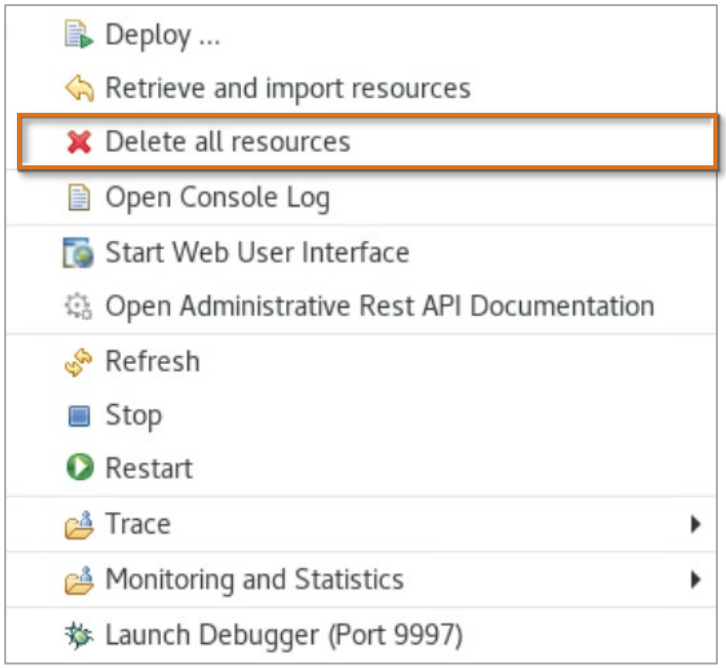


Section 7. Exercise clean-up

At the end of each exercise, an environment clean-up ensures that no potential conflicts occur with the exercises

__ 1. Remove the **Transformation_Map** application form the integration server called `TEST_SERVER`.

__ a. Right-click `TEST_SERVER` and then click **Delete all resources**.



__ b. Click **OK** on the confirmation window.

__ c. In the Integration Explorer, right click `TEST_SERVER` and select **Stop.**

__ d. Right click `TEST_SERVER` and select **Remove connection**.

__ 2. Close the IBM App Connect Enterprise command console.

End of exercise.

Exercise review and wrap-up

In the first section of this exercise, you created and started a local integration server by using the IBM App Connect Enterprise Toolkit.

In the second section of this exercise, you imported an IBM App Connect Enterprise project interchange file that contained a message flow application.

In the third section of this exercise, you examined the message flow and learned how to access message flow node properties, terminal information, and connection information. You also used the XML Schema editor to examine an XML schema. Then, you used the Graphical Map editor to view the contents of a .map file.

In the fourth section of this exercise, you used the Flow exerciser to deploy and test the message flow application.